

A NEW SPECIES OF *NERITINA* (ARCHAEOGASTROPODA, NERITIDAE) FROM THE LAGOS LAGOON

Victor Yoloye† and O. S. Adegoke*

†*Department of Biological Sciences, University of Lagos, Lagos, Nigeria*
and

**Department of Geology, University of Ife, Ile-Ife, Nigeria*

ABSTRACT

Neritina kuramoensis Yoloye and Adegoke, a new species from the Lagos Lagoon system, is described. The morphological features which distinguish the new species from the partly sympatric *N. glabrata* Sowerby are its relatively larger size, the thicker shell with higher spire, the duller brown colour of its ornamental patterns and the stout, deeply depressed operculum.

The average adult height of 6-12 mm contrasts with the 3-5 mm shells characteristic of *Neritina glabrata*. Largest specimens of the new species attain a height of about 15 mm. The spire is conspicuously high and is demarcated from the body whorl by a depressed suture. The obtuseness of the apical angle is also diagnostic; the apical angle of *N. kuramoensis* being 90° , while that of *N. glabrata* is 120° . *Neritina kuramoensis* can also be further distinguished from *N. glabrata* by its larger egg capsules and the finer-grained arenaceous material utilized in its construction.

INTRODUCTION

Two polymorphic, partly sympatric species of *Neritina* occur in the shallow marginal lagoons and estuaries of southwestern Nigeria (Fig. 1) (Adegoke, Dessaugie & Yoloye, 1969). The

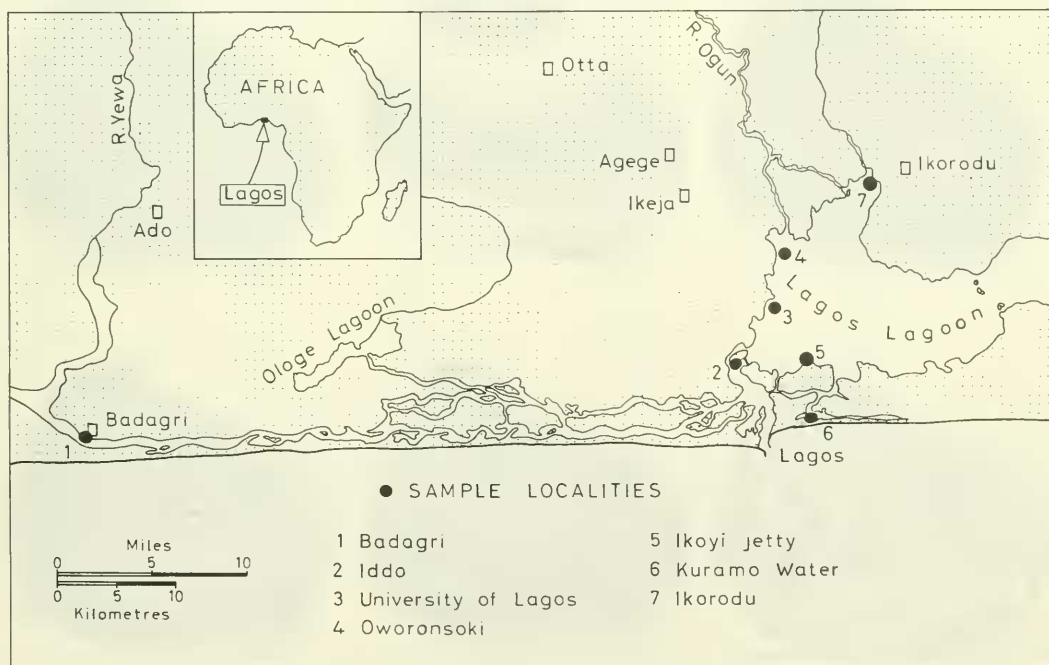


FIG. 1. Sample localities in southwestern Nigeria.

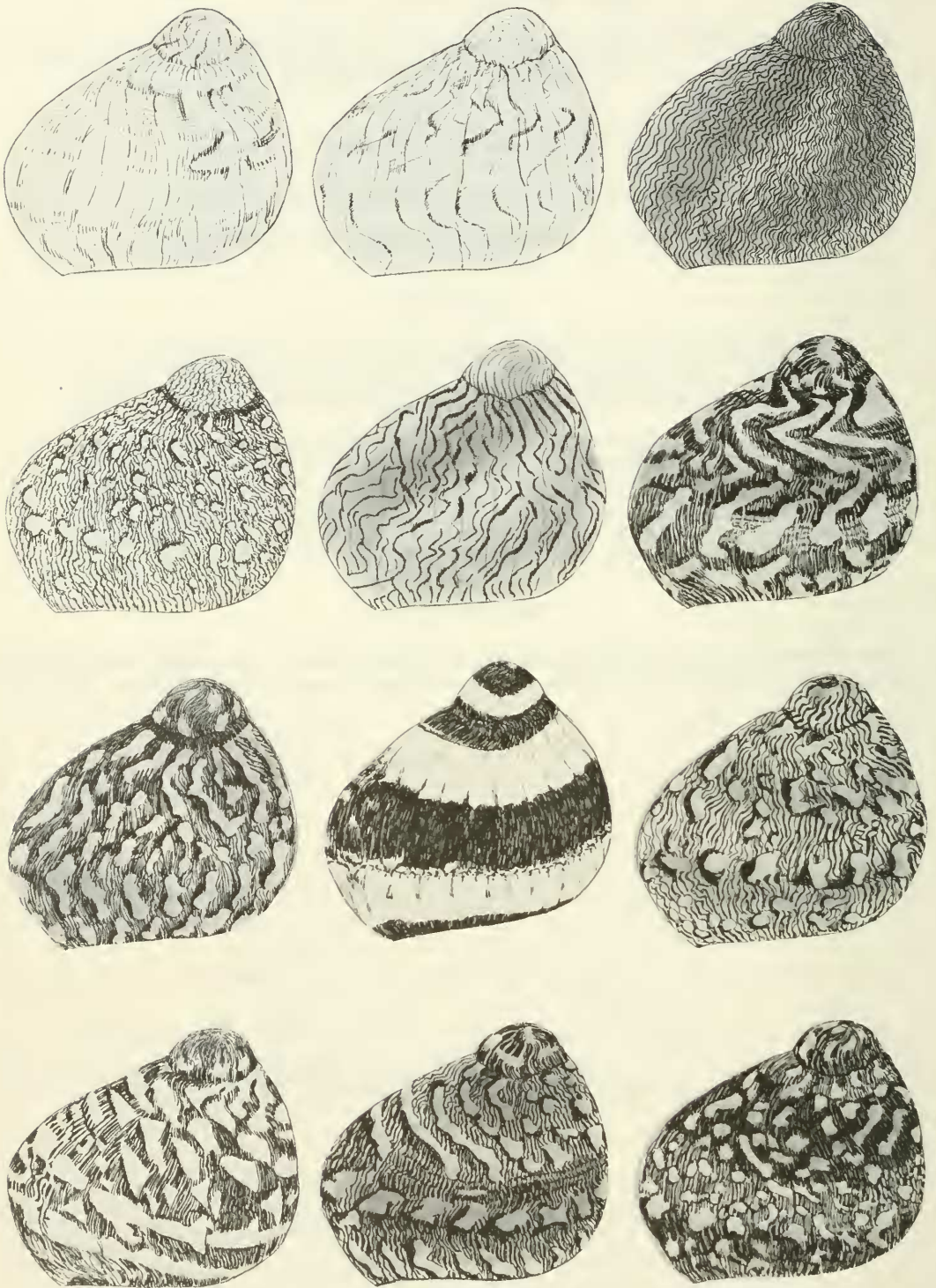


FIG. 2. *Neritina kuramoensis* Yoloze and Adegoke showing a few of the colour variations.

most common, *Neritina glabrata* was described by Sowerby (1849) and Nicklés (1950). The other, *Neritina kuramoensis* n.sp., was encountered during our study of the biology of *N. glabrata* (Adegoke *et al.*, 1969). The description of this new species and its ecology form the subject of this communication.

Neritina kuramoensis Yoloye and Adegoke, n. sp., Fig. 2

Description:

Shell medium to large-sized, thick and slightly oblique. The spire is prominent and consists of about 2-3 slightly inflated whorls. The body whorl is large and inflated, aperture is elongate oval. The apical angle is about 90°.

The shell is smooth, variously coloured, but dull. There is a gradation from cream-coloured shells through variously lineated, banded and spotted forms. The red, brown and black lineations, bands and spots are superimposed on a generally dull, brownish background.

The columella is smooth, and covered by a moderately thick callum. Its outer margin is blunt and has few denticulations.

The operculum is calcareous, thick, stout and rather wedge-shaped. Its outer margin is moderately thick and bears a thin border of transparent chitin. The inner margin is heavier with a calcareous rim. Its outer surface is conspicuously depressed.

Holotype: University of Ife Museum of Geology, No. 25.

Paratypes: University of Ife Museum of Geology, Nos. 26-48.

Dimensions:

	Type No.	height (mm)	max diameter (mm)
Holotype No.	K13	9.1	7.5
Paratype No.	1 K14	10.3	9.3
	2 K 4	8.5	6.6
	3 B18	9.3	7.5
	4 K 6	11.3	9.7
	5 K 3	7.8	6.3
	6 B 9	6.0	4.5
	7 K 2	8.7	6.7
	8 K10	8.7	6.8
	9 K16	9.9	8.1
	10 B10	9.7	7.8
	11 K15	7.8	6.4
	12 K18	8.5	6.5
	13 K20	9.1	7.1
	14 K 5	7.8	5.8
	15 B17	6.5	5.4
	16 K22	9.9	8.0
	17 K19	10.0	7.0
	18 B13	7.3	6.2
	19 B 3	7.7	6.5
	20 K17	8.0	6.5
	21 K 9	6.4	5.0
	22 B 4	8.7	6.8
	23 B 1	7.5	6.4

Neritina kuramoensis secretes a dome-shaped, oval agglutinated egg capsule about 1-2 mm in diameter. Only fine particles barely perceptible at magnifications of over 80 times are utilized in the construction of the capsule.

Type Locality: Kuramo Water (Fig. 1). Specimens occur abundantly on water reeds and mangroves near the lagoon edge. The new species is named after the type locality.

Remarks:

The morphological features which distinguish *Neritina kuramoensis* n.sp. from the partly sympatric *N. glabrata* are its relatively larger size, the thicker shell with higher spire, the duller brown colour of its ornamental patterns and the stout, deeply depressed operculum.

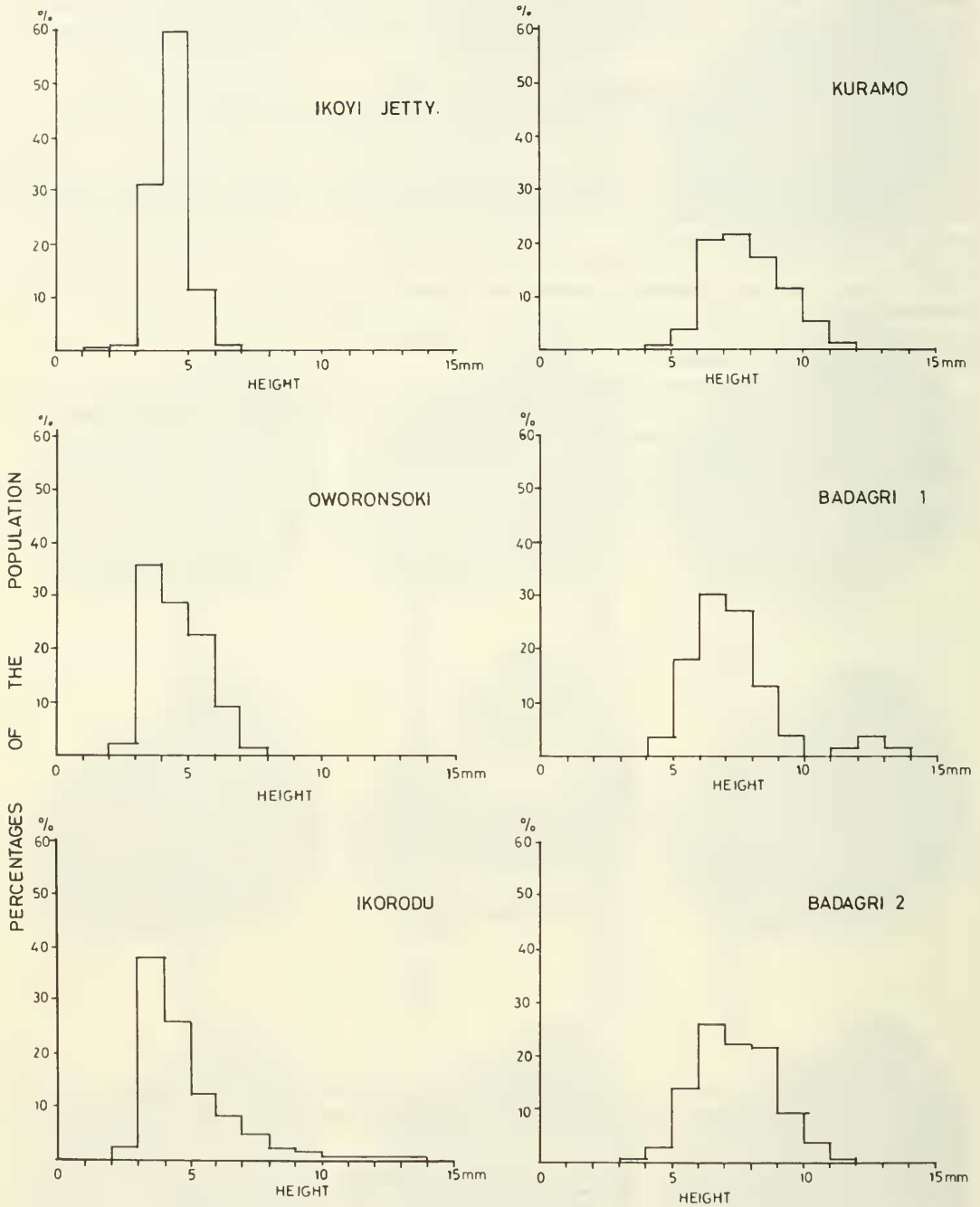


FIG. 3. Frequency distribution of the neritinas in various parts of the Lagos Lagoon.

The average adult height of 6-12 mm contrasts with the 3-5 mm shells characteristic of *Neritina glabrata*. Largest specimens of the new species attain a height of about 15 mm. The spire is conspicuously high and is, in unworn shells, demarcated from the body whorl by a slightly depressed suture (Fig. 2). (The spire of *N. glabrata* is extremely short and is conspicuous.) The obtuseness of the apical angle is also diagnostic. Because of the higher spire *N. kuramoensis* n.sp. is less obtuse (apical angle 90°) than *N. glabrata* (apical angle 120°).

While both species show an equally impressive variability in colour pattern, the new species is, generally dull coloured in contrast to the shining colour with bright yellowish background of *Neritina glabrata*. The new species may also be further distinguished from *N. glabrata* by its larger egg capsules and the finer-grained arenaceous material utilized in its construction.

POLYMORPHISM

Neritina glabrata and *N. kuramoensis* n.sp. both show remarkable diversity in shell colouration. Fig. 2 shows a few of the innumerable patterns found in *N. kuramoensis*.

Early in our study, an attempt was made to separate shells into "natural" groups on the basis of colour patterns. It was assumed that shell colouration might reflect speciation, or sexual dimorphism or ecological differentiation. It was soon discovered however, that no 2 shells were identical and that the colour patterns formed a gradational spectrum.

The most commonly occurring colours are yellow, purplish-red, brown, gray and black, with the darker colours predominating. There is a gradation from uncoloured shells, through lineated, spotted and banded to completely black shells. Within each of these categories, major variations exist not only between individual shells but also on different parts of the same shell.

Uncoloured shells are generally cream-coloured and are sparsely represented in populations of both species. Lineated shells differ in the number, orientation and thickness of the lines. Most have many straight to slightly wavy lines, others have chevron-shaped lineations exemplified by some of the specimens figured.

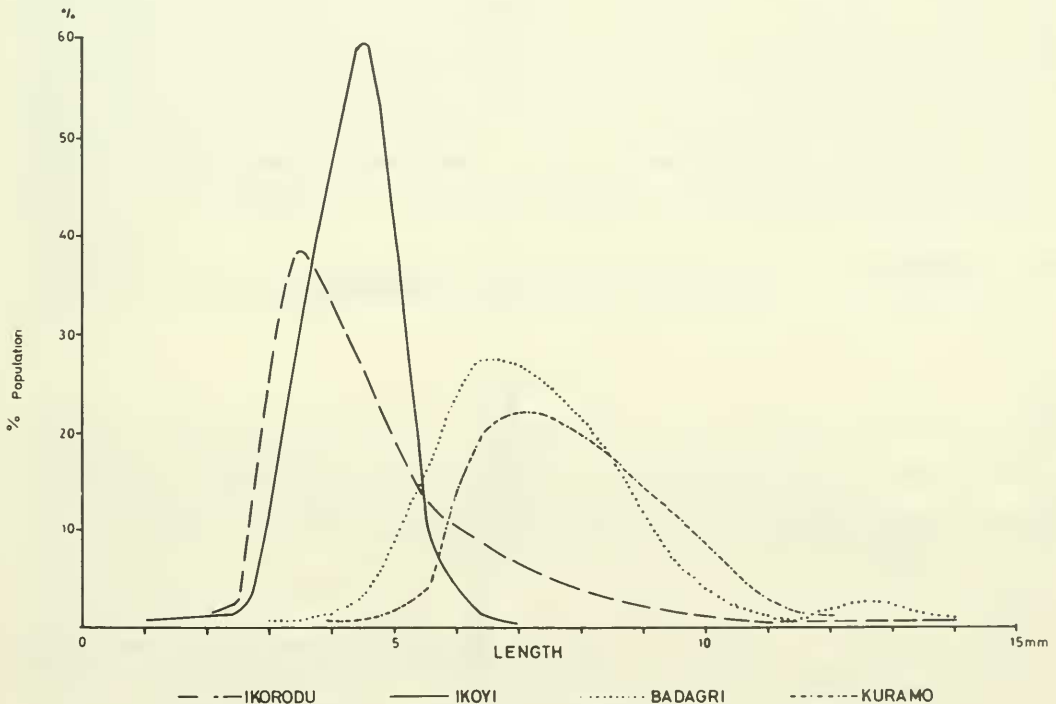


FIG. 4. Relative abundance of *Neritina glabrata* and *N. kuramoensis* at Ikorodu, Ikoyi, Badagri and Kuramo waters.

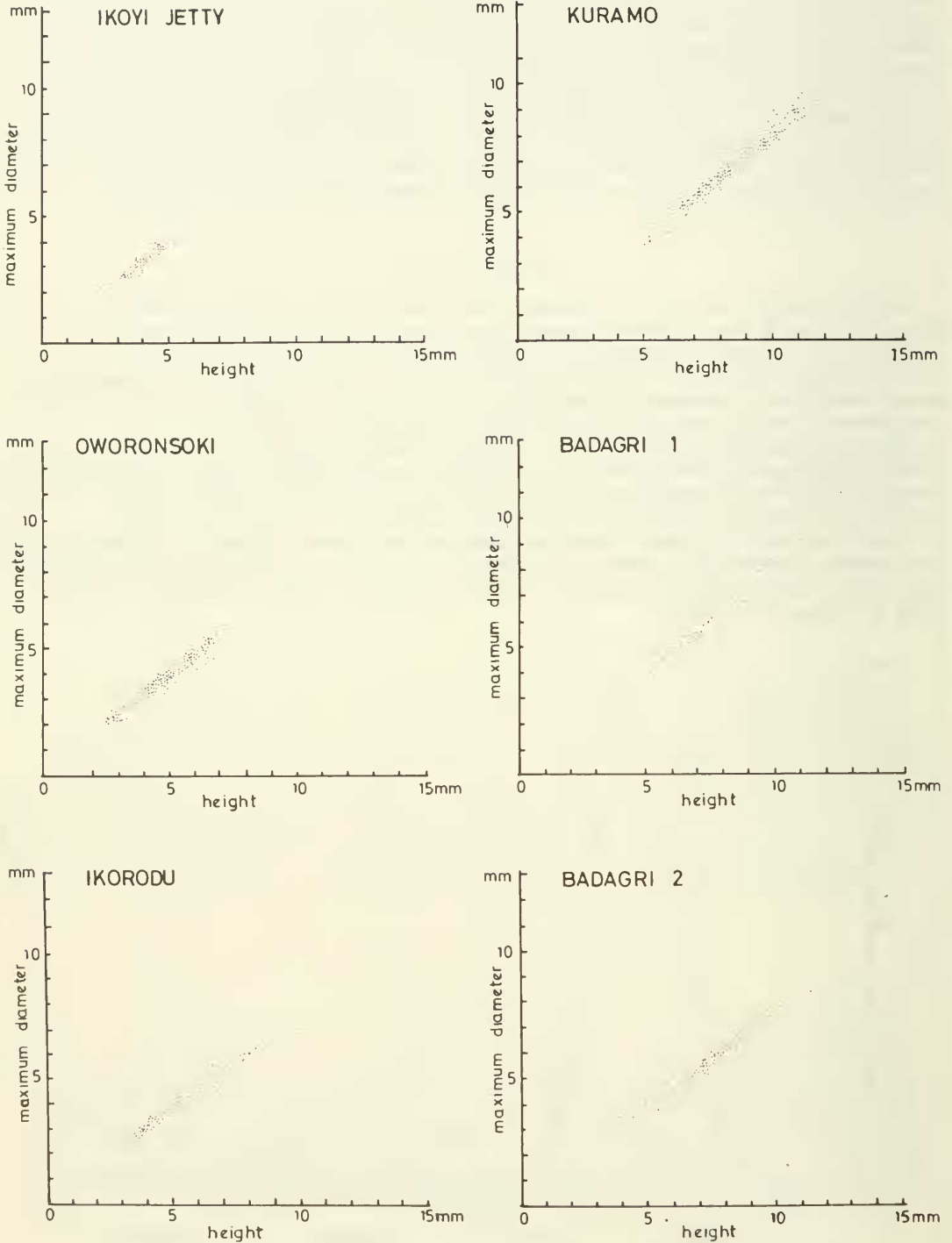


FIG. 5. Diameter-height relationships of the populations of neritinas in 6 localities.

Banded shells may have thin or thick bands whose number and disposition vary from shell to shell. The bands may be solidly coloured, lineated or spotted. Spotted shells may have many scattered dots or a few large blotches. Completely black specimens are rare and constitute less than 1% of the populations of both species. Lineated forms dominate populations of *Neritina glabrata*, whereas populations of *N. kuramoensis* are dominated by spotted and blotched forms.

Within both species, populations inhabiting less saline water are averagely darker than those from more saline water.

ECOLOGY

Neritina glabrata and *N. kuramoensis* n.sp. inhabit lagoons and estuaries off the Guinea Coast. Within this tropical region, most ecological factors (e.g., temperature, light intensity, etc.) are relatively constant (Olaniyan, 1961; Hill & Webb, 1958). Major fluctuations occur, however, in salinity and nature of bottom deposits, and these appear to be the chief factors limiting the distribution of *N. glabrata* and *N. kuramoensis*.

Neritina glabrata is stenohaline. It occurs abundantly only in the open lagoons (e.g., Ikoyi and Kuramo). It is absent in the harbour and Onijegi lagoon where salinity remains relatively high for the greater part of the year. It is also conspicuously absent in areas such as Badagri, Epe and the intervening narrow creeks where freshwater conditions prevail most of the year. The species is confined to areas of the lagoon with clean, coarse sandy bottoms.

The distribution of *Neritina kuramoensis*, by contrast, is to a large extent independent of salinity. The species is more euryhaline. The species was found in large numbers at all seasons in Onijegi lagoon, where salinity at the edges is never lower than 14‰ (Yoloye, 1969), and also at Badagri and the intervening creeks where the water remains virtually fresh (below 1‰) all year round.

Neritina kuramoensis n.sp. lives naturally on mangrove rhizophores, reeds and other water plants. In some areas, it is found in the muddy deposits of the mangrove swamps, at the edges of the lagoon. In such areas, it lives alongside the gastropods *Tympanotonos fuscatus* and *Pachymelania quadriseriata* and the crab *Sessama*.

Many areas where *Neritina kuramoensis* are found dry up between November and April each year. During this period the snails are inactive and lie partly buried in the dry mud until their habitat becomes flooded in May. While *N. glabrata* cannot survive out of water for more than 1 week, *N. kuramoensis*, on the other hand, soon dies if kept under water for long.

Neritina glabrata and *N. kuramoensis* are partly sympatric. Both species are abundant in some parts of the Lagos Lagoon system. Figs. 3,4,5 show the results of population studies at 6 locations—Ikoyi jetty, Oworonsoki, Ikorodu, Kuramo and 2 locations in Badagri—(see Fig. 1 for locations).

The population of *Neritinas* at Kuramo and Badagri consist mostly of *N. kuramoensis*, while in the other 3 locations *N. glabrata* form the bulk of the population.

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